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Ascent, Descent, and Divergence:
Darwin and Haeckel on the Human Family Tree

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Abstract. In their pathbreaking discussions of the human family tree in the 1860s and 1870s, Ernst Haeckel and Charles Darwin had to account for both the ascent of the species and its diversification into races. But what were the cause and the pattern of diversification, and when did it begin? Did we attain a common humanity first, which all the races still share? Or did we split up as apes and have to find our own separate and perhaps not equivalent ways to become human?

Using texts and images from their principal works, this paper recovers Haeckel's and Darwin's views on these points, relates them to the monogenist-polygenist debate, and compares them to Alfred Russel Wallace's 1864 attempt at a compromise.

Introduction

When we speak of "defining and redefining the borders between the human and the animal," how do we picture those borders? Is there a sharp line across a single pathway or scale of nature? Is there a broad, blurred region? Or are we talking about an evolutionary tree rising toward the human level? Where is the boundary in that case? Does it cut across just one branch? Or are there several that might have made the grade, or might yet make it?

Then, even if we can agree on the general arrangement of species, what should we make of any varieties or races within species, especially those near the border? Do the races occupy different levels on a scale, with some more human than others? Or can they stand side by side on different branches of a tree? And if the latter, where are the branching points in relation to the animal-human border? In other words, did our ancestors first reach the human level all together, establish a common humanity, and only then diversify into races, relatively recently and superficially?

Or did the races diverge first, retaining deep and ancient differences as they ascended on separate pathways toward humanity?

Even today, reconstructions of the human family tree are scrutinized for what they might imply about the unity of the species and the antiquity of racial differences. When studies of mitochondrial DNA in the late 1980s pointed to a relatively recent "mitochondrial Eve" who lived in Africa, the idea was appealing, at least in part, because it minimized racial divergence. Inspired by the mitochondrial data, the "Out-of-Africa Hypothesis," quickly gained support. It had modern *Homo sapiens* originate exclusively on that continent, disperse throughout the world, replace *H. erectus* and its offshoots everywhere, and only then diversify into geographic races.[1]

The main alternative, in the 1990s, was the "Multiregional Hypothesis," under which proto-humans ranged over several continents while they were evolving into *H. sapiens*. Continual movement between regions created enough gene flow to ensure that the most important human characteristics would be shared world-wide, but not too much to obliterate all regional and racial differences, some of which might date back to *H. erectus*. Various compromise models are currently under discussion, which incorporate emigration of incipient *H. sapiens* out of Africa, but have them interbreeding at various rates with archaic regional forms, instead of replacing them.

Despite the gene flow, proponents of a multiregional origin have found themselves on the defensive against charges that they undermine the unity of "modern humanness,"[2] and against insinuations that they give new life to nineteenth-century theories of separate origins for the races or linear ascent of mankind.[3]

One fear is that any linear picture of ascent, development, or classification would have social and ethical implications, like the old scale of nature or "great chain of being." Eighteenth-century and Lamarckian versions of the scale were based not only on morphological complexity, but on mental progress. Higher levels added sense organs and faculties not

1. Cann, Stoneking, and Wilson 1987.

2. Wolpoff and Caspari 1997; Wolpoff, Hawks, and Caspari 2000, especially footnote 1, on 129.

3. Gould 2002, 910–914; Wolpoff and Caspari 2002.

available at lower. Earlier versions had extended the scale upward to the angels and the godhead.[4] Hence, any attempts to arrange the human races on a scale, even if ostensibly based on physical criteria, carry connotations about degrees of humanness and moral advancement.

Stephen J. Gould argued most forcefully in his 1977 *Ontogeny and Phylogeny*,[5] that linear systems encouraged simplistic comparisons and rankings of individuals and groups, and that they thereby lent scientific credibility to the worst forms of biologically based discrimination, including eugenics and National Socialism.

The other fear is of polygenist anthropology, which argued that the human races were unrelated, separate productions or creations. The argument sometimes was used to justify slavery and imperialism, under the assumption that separately created peoples did not all have the same moral standing or natural rights. The polygenists were engaged in a politically and ethically charged rivalry with the monogenists, who held that the races were all descended from common human stock. There were Biblical and biological arguments in favor of both positions.[6]

The biological versions drew on pre-Darwinian successional paleontologies like those of Heinrich Georg Bronn in Germany or Charles Lyell in England. The idea was to take the discontinuities in the fossil record at face value. If a species seemed to appear suddenly at a particular time and place, it was presumed actually to have begun its existence then and there. How it originated was not explained, but it was presumed not to be by transformation of previous forms of life. The new species were unrelated to the old, no matter how similar they might look.

Successional accounts were still influential right up until the publication of *The Origin of Species* in 1859,[7] and Charles Darwin (1809–1881) treated them as his principal rivals. Whenever he spoke of "creation," he was more likely to mean the paleontologist's notion of species succession than the Biblical version.

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4. See, e.g., Lovejoy 1936; Uschmann 1939.

5. Gould 1977, 115–166.

6. For a recent overview and the case for a religious basis of American polygenism, see Keel 2013.

7. Gliboff 2008; Rupke 2005.

Darwinian common descent quickly superseded the successional account in paleontology, but what were its implications for mongenist-polygenist debate in anthropology? Early Darwinians, including Darwin himself, his co-discoverer of natural selection, Alfred Russel Wallace (1823–1913), and his leading German interpreter, Ernst Haeckel (1834–1919) all addressed the problem in the 1860s and 1870s.

Committed as they were to universal common descent, they all had to favor monogenism, but not necessarily a very recent common ancestor of all the races. If they made that ancestor distant enough and emphasized how far apart the races had grown, they could offer a compromise to the polygenists and perhaps win them over to the Darwinian camp.[8]

These authors have been much discussed in the secondary literature, yet there are great differences of opinion about what their views on race even were, and it is difficult to pin them down on the twin problems of ascent and divergence—in particular on the shape of the human family tree, where the races branched off, and at what point they became human. Haeckel and Darwin can seem at times to forget about the branching altogether and to speak of scales of human progress. Yet at other times they emphasize the diversity of the human family tree and that evolutionary change is not always upward on a scale.

Part of the problem is their usage of the word "race," which does not always mean what modern readers expect. The sorts of groups that move up the scale are not the same as the ones that branch off and diversify, but are more often subgroups—ones that we would tend to think of today as "ethnic groups." Another part of the problem is the dearth of diagrams from Darwin and Wallace. And another is the abundance of diagrams from Haeckel, which are not always consistent with each other or with the accompanying texts.

This paper analyzes the writings and (where available) the tree-diagrams of Darwin, Haeckel, and to a lesser extent Wallace, with the aim of clarifying and comparing their views on the origins of humans

8. This sort of compromise is discussed by Stocking 1968 and more recently by Alter 2007b, who calls it "evolutionary polygenism." For more on nineteenth-century conceptions of race, including polygenism and monogenism, see Stepan 1982. On the centrality of racial issues in Charles Darwin's intellectual development and his opposition to polygenism: Desmond and Moore 2011; Desmond and Moore 2004

and their races. As we shall see, Wallace took the lead in developing a Darwinian answer to the monogenism-polygenism question in 1864, and he compromised most with the polygenic view. He argued that the races must have diverged at a distant, pre-human stage. Darwin opposed that interpretation and made racial divergence more recent and superficial. Haeckel was equivocal. On the whole, he accentuated racial divergence more strongly than Darwin, but, by my reading of his tree diagrams, he also allowed for more recent common ancestry of the races than did Wallace.[9] Although they speak of progress toward the human level and of ranks below it, all three are clearly committed to branching evolutionary trees of primates and of human races.

Haeckel's Phylogenetic Trees

Historians and biologists alike have been reluctant to accept Haeckel as a proper Darwinian. There is the most doubt about Haeckel's adherence to the branching tree of evolution that is considered a hallmark of Darwinism. By most accounts, Haeckel bowdlerized Darwin's theory because he was steeped in German Romantic *Naturphilosophie* and idealistic morphology and to the linear schemes of Lamarck. He clung to archaic notions of ideal types and scales of progress and perfection. Gould's influential account depicted Haeckel's bad Darwinism and outmoded morphology as sources of Nazi racial ideology[10] and contributed to a long-running line of argument that has identified Haeckel and German Darwinism with Romantic and idealistic morphology and generally placed them outside of the international mainstream.[11]

To the extent that they rely on the linearity of Haeckel's evolutionary schemes, these accounts are very poorly supported. Aside from his

9. On Darwin's rejection of Wallace's approach, see Alter 2007b; Desmond and Moore 2011, 341–347 & 366–368. Alter has Darwin reacting more to Haeckel than to Wallace, however, and he sees Haeckel leaning more consistently toward polygenism than I do.

10. Gould 1977, 77–78. Gould was endorsing the Haeckel-to-Hitler thesis from Gasman 1971.

11. Bowler 1983; Breidbach 2003; Russell 1916; For an extended critique, see Gliboff 2008, 20–24.

general admiration for Goethe and Lamarck, little evidence is ever cited for a linear scale in Haeckel, other than the illustration in Figure 1, from *Anthropogenie* [The Evolution of Man] (1874).[12] The impressive tree trunk rising toward the *Menschen* [Humans] at the top surely suggests a single main path of ascent, but just as surely, the tree does have branches. Not all paths lead upward and not all upward paths lead to humanity. Moreover, Haeckel repudiates the scale of nature, simplistic measures of progress and perfection [*Vervollkommnung*], and any suggestion of a teleological progression toward Man.

The persistence of linear scales and classification schemes in Romantic-era and later German biology tends to be overstated. The "Great Chain of Being" might still have had a hold on Jean-Baptiste de Lamarck as late as 1809, but even his chain was beginning to branch by then (see Figure 2).[13] Romantic-era German morphologists were ambivalent about it, at best, and experimented with various geometries and measures of progress. If they applied the scale of nature at all, it was only with caveats, bends, backtracks, and sometimes some branching like Lamarck's.

The embryologist von Baer, whom Haeckel counted as an important forerunner of evolutionary thought, had treated linear developmental or evolutionary schemes scornfully in 1828, "Because a unilinear metamorphosis, like a railroad, only allows movement upward or downward, not to the side."[14] Such a narrow and arbitrary pathway constrained nature's creativity and could not do justice to the obvious diversity of life. The paleontologist Bronn, another of Haeckel's major pre-Darwinian authorities, had dispensed with it by the 1840s.[15] Why would Haeckel want to revive it in 1874? He would have been reaching way back to the eighteenth century or earlier, not to just his supposed Romantic roots.

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12. Haeckel 1874, Fig. XII, facing 496.

13. Lamarck 1830, 463.

14. "*Weil eine einreihige Metamorphose wie eine Eisenbahn nur vorwärts oder rückwärts gehen lässt, nicht zur Seite*," Baer 1828, 201.

15. Gliboff 2008, 61–86.

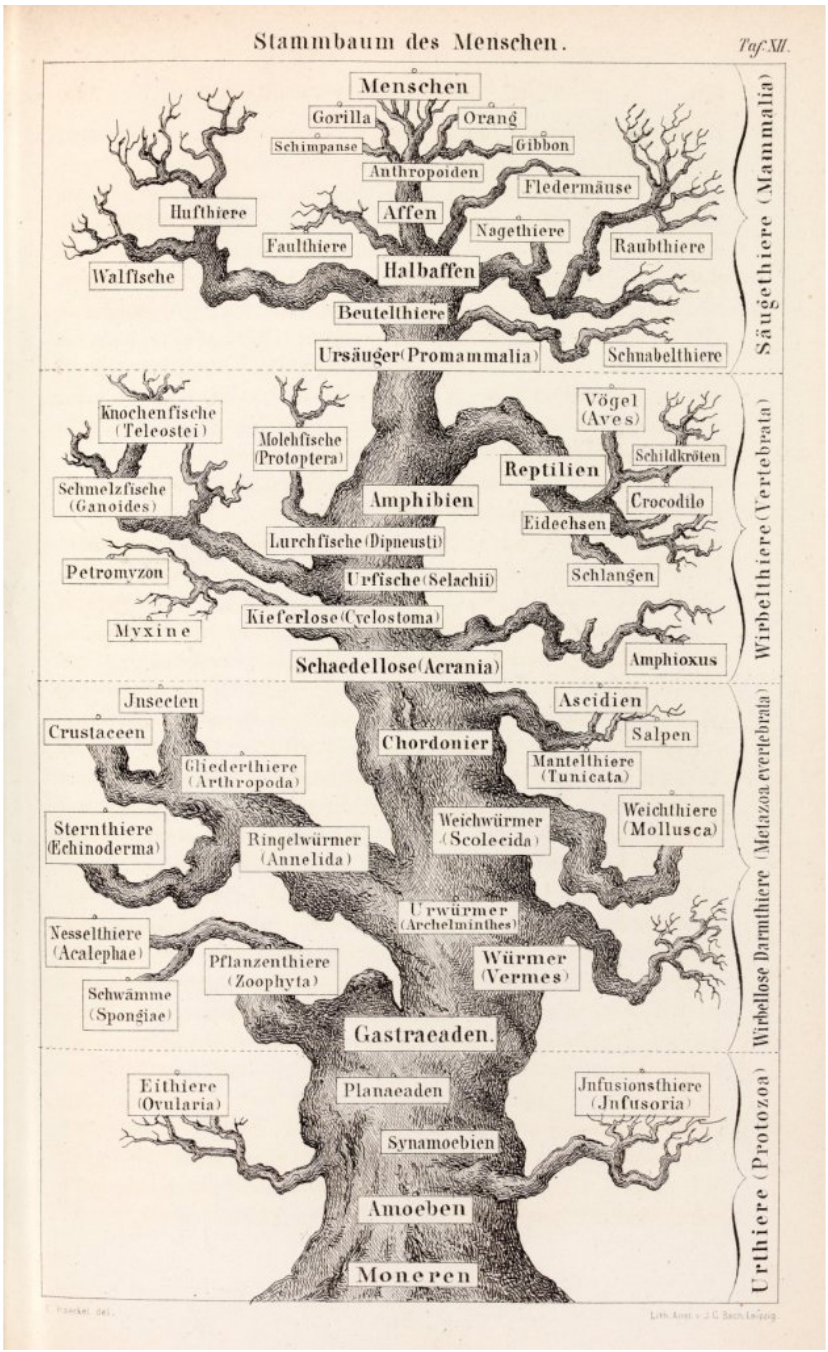

Figure 1: Tree of human evolution from Haeckel's *Anthropogenie* (1874) with distinct main trunk.

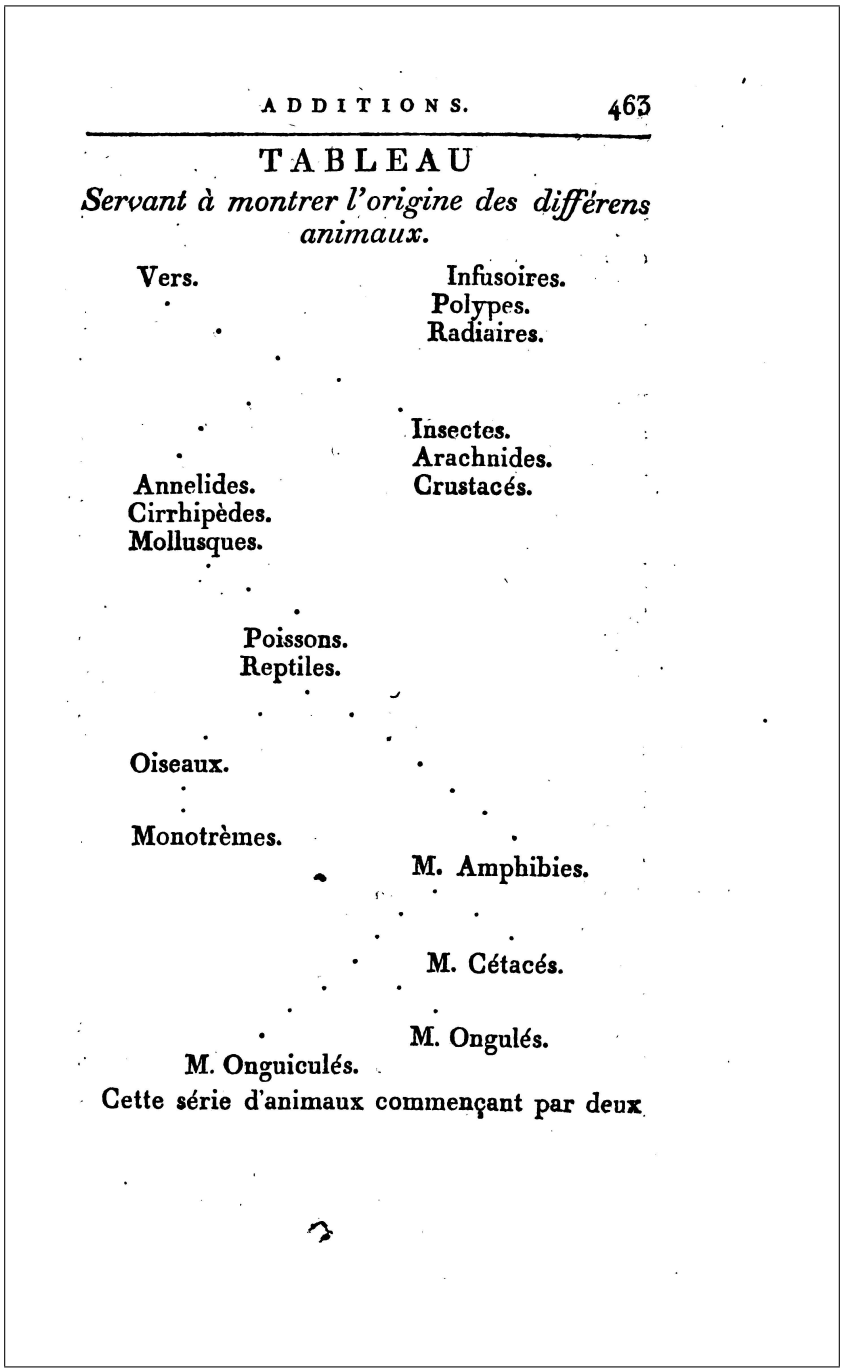

Figure 2: Tree diagram from Lamarck's *Philosophie Zoologique* (1809). Most animals descend from the worms, which are at the top left.

It is a mistake to focus on the *Anthropogenie* tree to the exclusion of a forest of countervailing evidence. Of course that book would feature a tree that highlighted the line to Man—that line, and no other, was the subject of the book. And, again, the side branches were not left out, just trimmed short. But most important, they were clearly side branches: the forms they represented were not depicted as stages in human evolution. Especially toward the crown, there is extensive branching for the apes and gibbons, and even some unlabeled lines that could be the human races, radiating from a common ancestor close to the top.[16]

In the context of Haeckel's other works, the mighty trunk of the human tree is an anomaly. All of his other trees—and he drew us many—are as deliquescent as the one in Figure 3.[17] And even within *Anthropogenie*, more detailed diagrams display extensive branching, as in Figure 4, which situates humans on the mammalian family tree.[18]

Darwin and Divergence

In Darwin's case, too, there has been some question about the branching pattern of human evolution. To be sure, in 1859, in *The Origin* he had ascribed great importance to what he called his principle of "divergence of character," which was what made branches appear on the tree of life. The idea was that to succeed in the struggle for life, butting heads with your competitors was not always the best strategy. There were advantages in *avoiding* competition, too, for example by switching to new food sources. Natural selection would then favor difference as well as competitive superiority, and in this connection, Darwin introduced the one and only illustration in *The Origin*,[19] shown in Figure 5.

16. For a more authoritative discussion of the proper biological interpretation of this tree diagram, see Jenner, in prep., ch. 4.

17. Nat. Schöpf.-Ges. I, Plate I.

18. Haeckel 1874, 493.

19. Origin I, facing 117.

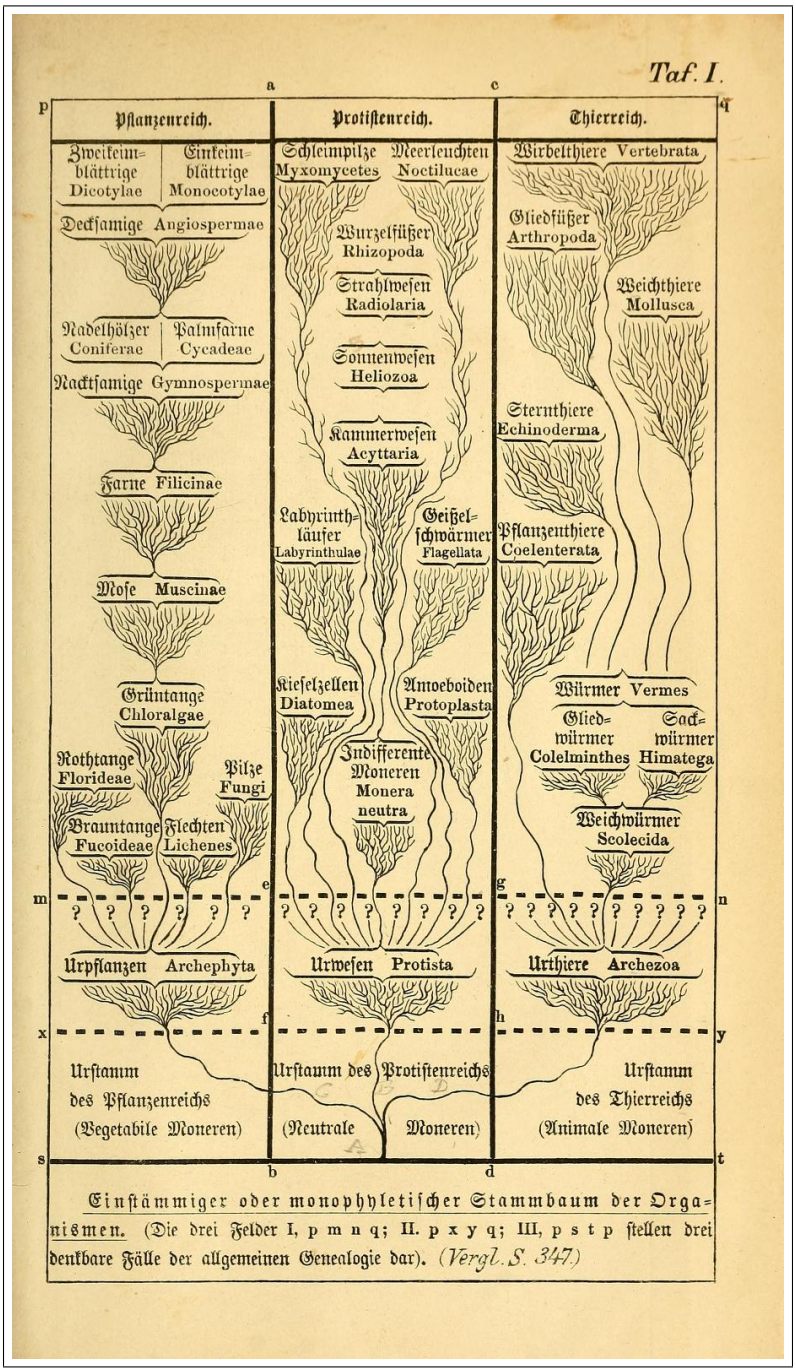

Figure 3: Tree of animal evolution from Haeckel's *Natürliche Schöpfungs-Geschichte* (1868). Humans would be somewhere in the tuft of vertebrates at the upper right.

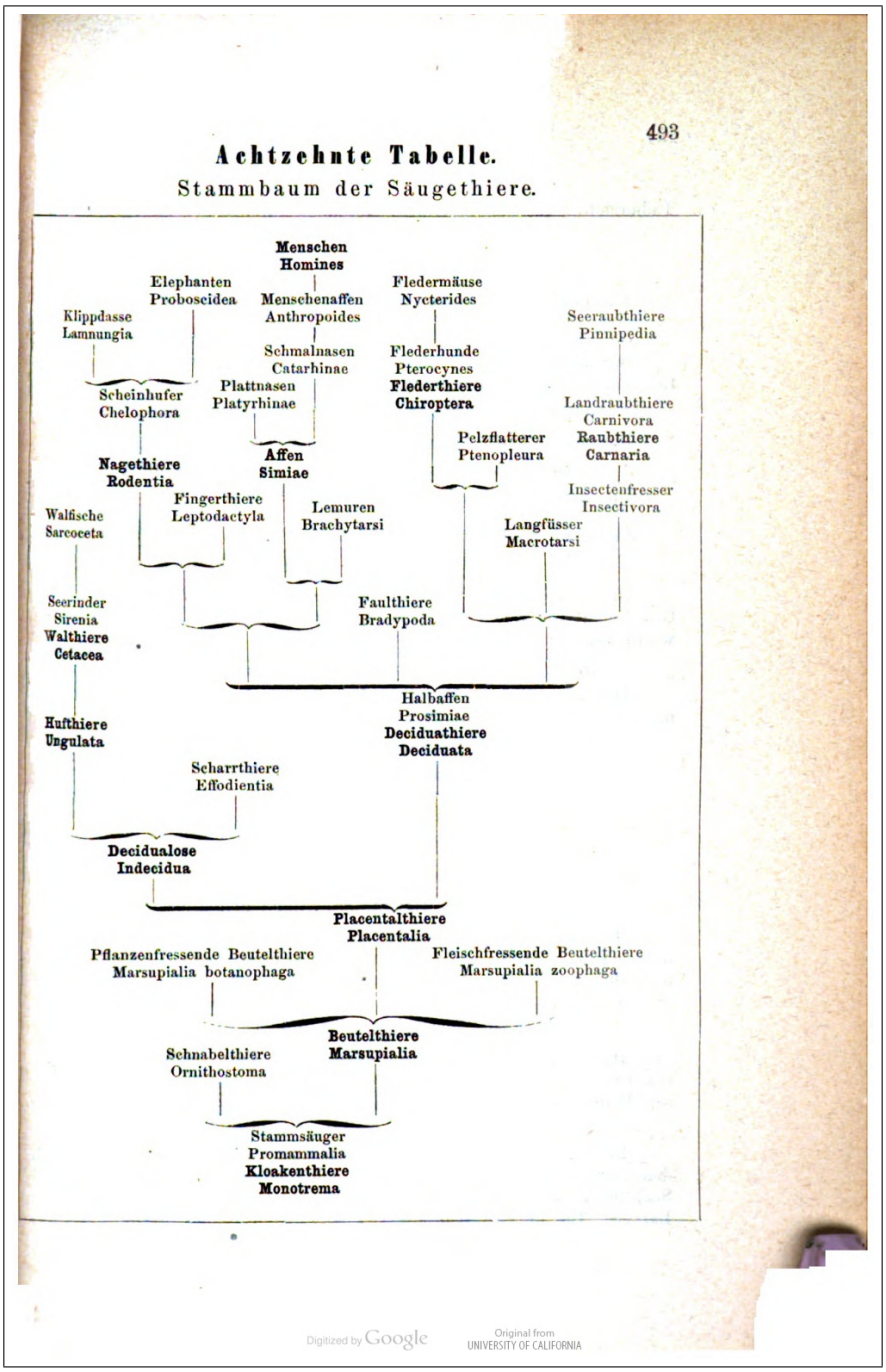

Figure 4: Tree diagram of mammalian evolution from Haeckel's *Anthropogenie* (1874), showing detailed branching of lineages.

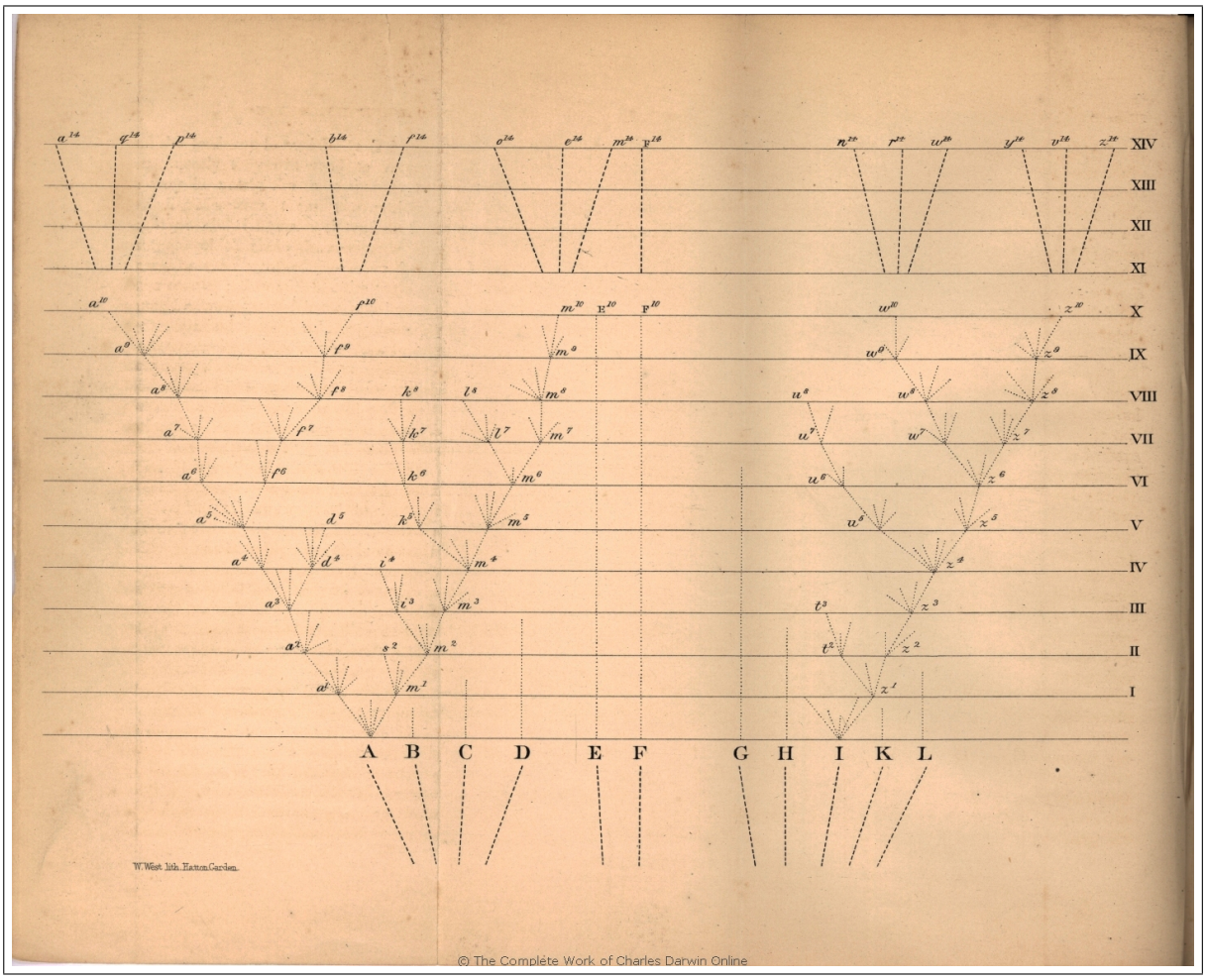

Figure 5: Tree diagram from *Origin of Species* (1859).

Thanks to the horizontal dimension, Darwinian evolution is not constrained to going up or down on a track, but is free to go in various directions, without any one of them having to be superior or even directly comparable to any other.

But then in *The Descent of Man*, Darwin oddly seems to forget—at least in the early chapters—how important that horizontal dimension had been to him. He does not draw us any trees, neither does he enumerate the steps in human evolution very systematically, but his language does suggest a linear scale of mental and moral improvement. He describes various historical and living human subgroups as more or less "savage" or "civilized." For example, he observes that, "The Fuegians rank amongst the lowest barbarians,"[20] and that, "Differences. . .between the highest men of the highest races and the lowest savages, are connected by the finest gradations."[21]

The implied scale goes from the Quadrumana (apes and monkeys) through the "early progenitors of man"[22] (who have higher mental powers than apes, but cannot really use language), then "primeval men"[23] (who used stone tools and spoke), "the lowest savages"[24] (who could not count beyond four), various grades of barbarians and civilizations, and at last to modern Christendom. In short, chapters II–V would seem at first glance to line up the races in single file.

In the secondary literature, these chapters are often taken to represent Darwin's view of human racial evolution in its entirety,[25] but there

20. Descent, 1:34.

21. Descent, 1:35.

22. Descent, 1:56–57.

23. Descent, 52.

24. Descent, 34.

25. See, e.g., Stepan 1982, 52–66; Beasley 2010, 97–111. Even Desmond and Moore, who otherwise ascribe a rather egalitarian view of race to Darwin, concede that in *The Descent* he adopts a conventional linear scale on which to rank the races: Desmond and Moore 2011, 364–369. An exception is Alter, who recognizes that the racial hierarchy of the early chapters is not the whole story, and in Darwin's view not the inevitable outcome of evolution: Alter 2007b.

is much more to consider. In the later chapters,[26] Darwin finally introduces the horizontal axis of human evolution that enables racial divergence without superiority or inferiority. But in contrast to *The Origin*, divergence is caused here exclusively by sexual selection.

Natural selection was unsuitable as the driver of human racial divergence, because it favored variations that were useful in the struggle for existence (even if not always in head-to-head competition). Darwin held that racial differences—at least the physical ones—could *not* be so useful: "As far as we are able to judge (although always liable to error on this head) not one of the external differences between the races of man are of any direct or special service to him. . . ." Considering physical appearance, at least,

> Man resembles those forms, called by naturalists protean or polymorphic, which have remained extremely variable, owing, as it seems, to their variations being of an indifferent nature, and consequently to their having escaped natural selection.[27]

Mental and behavioral differences were, however, a different matter: "The intellectual and moral or social faculties must of course be excepted from this remark."[28] Changes in these kinds of traits were indeed subject to natural selection and moved the group up or down on the scale, not sideways, hence did not account for the branching off of the races. Conversely, the races branched off without the action of natural selection and without changing mentally and morally. Darwin has dissociated the physical divergence of the races from their mental and moral ascent.

Darwin used sexual selection to explain racial divergence as follows: some ancestral populations in different geographic regions just happened to vary slightly, maybe because of some local environmental effect, or just by chance. No important characteristic varied, only something like skin color, hair texture, nose shape, or limb proportions. In each region, the natives admired their own peculiarities, considered them marks of beauty, and selected mates accordingly. In Africa, for example, the darker-skinned beauties had greater success at mating and reproduction;

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26. Descent, especially ch. 19.

27. Descent, 1:248–249.

28. Descent, 1:249.

in Europe, the bright, pink ones were preferred. Over many generations these mating preferences perpetuated, accentuated, and spread the original regional characteristic.

If one had not read about the scale of ascent at the beginning of *The Descent*, one might see in sexual selection the basis for a very egalitarian account of racial divergence. The horizontal dimension that it opens up makes room for a tree with the races side by side on different branches, with the differences being only matters of taste.

In order to reconcile the two parts of the book, it is important to make a distinction between races and *Races*. The big ones—e.g., Negroid, Caucasoid, Mongoloid—diverged in Darwin's account by sexual selection, and their differences were physical, non-adaptive, and "sideways" on the scale of nature. At the point in time when they began to diverge, they were at the same level: they were human already, either "primeval men," or maybe "savages." Darwin had the big Racial classifications becoming established without reference to mental or moral superiority.

In contrast, the "races" that rise up the scale in the earlier chapters are subgroups, more like modern "ethnic groups." Darwin does not even refer to them consistently as races. When describing hypothetical pathways of struggle and ascent, Darwin is just as likely to pit "tribes"[29] against one another. Or when discussing concrete examples such as the Irish and the Scots, Frenchmen, Esquimaux, Fuegians, Hottentots, or Tahitians, he tends to call them "nations."[30]

These subgroups ascend independently of the rest of their Races to a variety of heights, for a variety of reasons: "It is, however, very difficult to form any judgment why one particular tribe and not another has been successful and has risen in the scale of civilisation."[31] On the whole, it seemed to be because of local circumstances and customs:

> Progress seems to depend on many concurrent favourable conditions, far too complex to be followed out. But it has often been remarked, that a cool climate from leading to industry and the various arts has been highly favourable, or even indispensable for this end. The Esquimaux, pressed by hard

29. Descent, 1:159–167.

30. Descent, 1:167–184.

31. Descent, 1:166.

> necessity, have succeeded in many ingenious inventions, but their climate has been too severe for continued progress. Nomadic habits, whether over wide plains, or through the dense forests of the tropics, or along the shores of the sea, have in every case been highly detrimental. Whilst observing the barbarous inhabitants of Tierra del Fuego, it struck me that the possession of some property, a fixed abode, and the union of many families under a chief, were the indispensable requisites for civilisation.

Luck could also be a factor:

> Such habits almost necessitate the cultivation of the ground; and the first steps in cultivation would probably result, as I have elsewhere shewn, from some such accident as the seeds of a fruit-tree falling on a heap of refuse and producing an unusually fine variety.[32]

In any case, Darwin nowhere suggested that tribes or nations ascended (or failed to do so) because of their color or anything else about their ancestral stock or Race. Subgroups of every Race could be found at many different levels. One could not assess a subgroup's mental or moral level just by looking at them.

Darwin provided no tree diagram of the races, but I would like to suggest that he approved of Haeckel's picture in the *Natürliche Schöpfungs-Geschichte* of 1868, which Darwin praised effusively in *The Descent*. There, Haeckel arranged the races in a bushy tree, and placed subgroups of each of the great Races at various heights on the scale.

Haeckel on Racial Diversification

Two major differences between Darwin and Haeckel should be noted, however. First, even though Darwin sang Haeckel's praises for appreciating the "full importance"[33] of sexual selection, one place where Haeckel did *not* invoke that form of selection was in his account of human racial

32. Descent, 1:167.

33. Descent, 1:4.

divergence. He had the races diverging for other reasons, such as environmental effects, natural selection, and correlations that might allow insignificant characteristics to ride the coattails of more advantageous ones. This is consistent in all the editions of *Natürliche Schöpfungs-Geschichte*, even those that came out after Darwin's *Descent*. So divergence, for Haeckel, did have survival value and could result in the superiority of one branch of the human tree over another.

Second, Haeckel usually referred to the major Races as "species," with subdivisions into subspecies and variants [*Menschenarten, Unterarten,* and *Abarten*]. Even though Haeckel noted that Darwin had rendered the distinction between species and races or varieties blurry and unimportant, his terminology accentuated the differences much more strongly than Darwin's. This was one way in which Haeckel reached out to the polygenist anthropologists, who preferred the species-level classification.

These differences notwithstanding, I think Haeckel's diagrams still capture the general pattern that Darwin had in mind. Consider Haeckel's first attempt at a family tree of the human races, from the first edition of *Natürliche Schöpfungs-Geschichte* (1868),[34] shown in Figure 6. It depicts a richly branching and diverse family, with the various groups rising to different levels of mental, social, or cultural attainment. The horizontal dimension is unmistakable. There is plenty of room to be different without being inferior.

Although they overlap, the range of heights reached by the colored races is lower than the whiter ones, so the system does reflect conventional racial prejudices. But there are also some surprising equalities, especially near the top, where we find Berbers and Jews joining the Germans.

The illustrations also capture some of the dynamism that I think Darwin, too, envisioned. There is considerable movement of racial groups between editions of the book. As Robert J. Richards has argued, these movements invite interpretation as illustrations of how Haeckel perceived human cultural and perhaps also biological progress during his own lifetime.[35] On that view, Haeckel's racial classification system is only a snap-

34. Nat. Schöpf.-Ges. I, Plate VIII.

35. Richards 2008, 244–55.

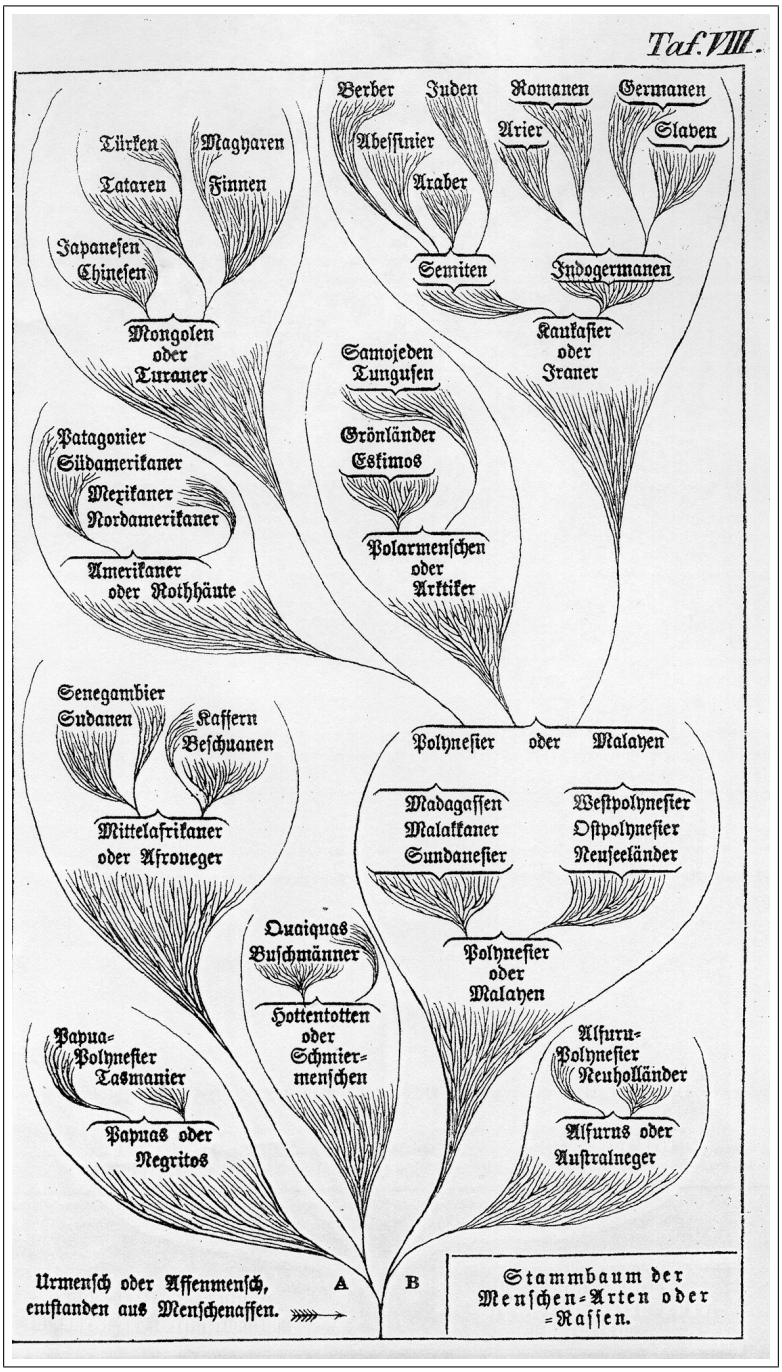

Figure 6: Family tree of the human races, from Haeckel's *Natürliche Schöpfungs-Geschichte* (1868).

shot of a living tree, on which the inferior groups are not stuck permanently at the lower levels, but have the potential for growing upward.

So when Darwin says in 1871 (and later) that he agrees with Haeckel on human evolution,[36] that indeed he would not even have attempted to write *The Descent* if Haeckel's *Natürliche Schöpfungs-Geschichte* had appeared any sooner, he must be satisfied with the way Haeckel captured the general pattern and the dialectical interactions of ascent and divergence—or at least he preferred to side with Haeckel rather than Wallace.

Where the Races Branch Off

In a paper presented to the Anthropological Society in 1864, Wallace had argued that once our ancestors reached the human level, the effects of natural selection on their bodies would have to be greatly diminished. Full-fledged humans would respond to environmental or competitive challenges by changing their clothing, housing, tools, or social organization.[37] Most bodily variations would be immaterial for survival.

But if humans were no longer evolving much physically, how could they possibly differentiate into races? Wallace reasoned that racial differences must date from a much older period, when physical variation still was important. It was a time when Man was not fully human and

> had not yet acquired that wonderfully developed brain. . . , when he had the form but hardly the nature of man, when he neither possessed human speech, nor those sympathetic and moral feelings which in a greater or less degree everywhere now distinguish the race.

Ascent was still possible for the separate races, then as now, because natural selection always favored mental and moral characteristics such as

> Capacity for acting in concert, for protection and for the acquisition of food and shelter; sympathy, which leads all in turn to

36. Descent, 1:4.

37. Wallace 1864, especially 162–166.

> assist each other; the sense of right, which checks depredations upon our fellows; the decrease of the combative and destructive propensities; self-restraint in present appetites. . . .[38]

Our ape-level ancestors, then, must already have split up into races, and each race must have developed these mental and moral qualities, and become fully human, in its own way.

Darwin disagreed. He wrote in *The Descent*, referring to Man as a species, that "*since* he attained to the rank of manhood, he has diverged into distinct races" and that the common ancestor of all the races "would probably have deserved to rank as man."[39]

Haeckel is more difficult to pin down on this point. Was the last common ancestor of all the races still a man-ape [*Menschenaffe*] or already an ape-man [*Affenmensch*]? Could it speak? That would be more or less decisive, because Haeckel counted the acquisition of language as a most important last step in becoming human. Or, if it could not speak, was it already differentiated into separate races that would each invent speech and become human independently?

At least in his later works, Haeckel identified this last pre- or protohuman ancestor as the hypothetical *Pithecanthropus alalus* or "ape-man without speech" (Figure 7). After the discovery of Java Man, or *Pithecanthropus erectus* (now classified as *Homo erectus erectus*), was reported in 1894, Haeckel bragged that he had come very close to anticipating the real thing, the real missing link.[40]

But Haeckel was inconsistent in how he classified this last non-speaking ancestor. Sometimes he gave it the formal Linnaean binomial of the distinct genus and species *Pithecanthropus alalus*, sometimes he used only the generic *Pithecanthropus*, sometimes just *Alalus* as if it were itself a distinct genus, and sometimes he used only the vernacular *Urmensch* [primeval man] or *Affenmensch* [ape-man]. Thus he left himself some room for reinterpretation, while also suggesting a level that is human in most ways, just not in the use of language.

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38. Wallace 1864, 162.

39. Descent, 2:388, emphasis added.

40. Haeckel 1898, 715–716.

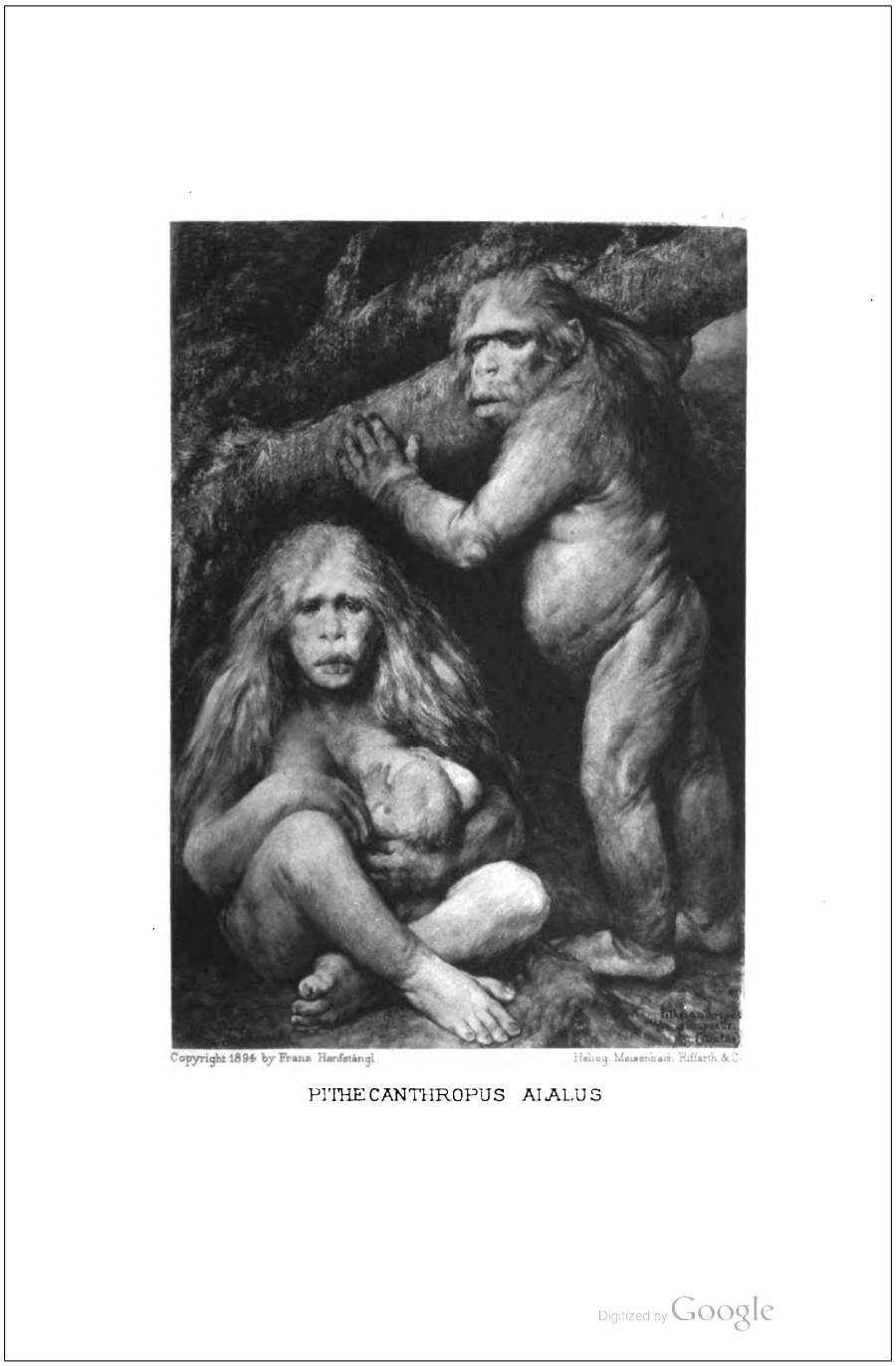

Figure 7: Artist's conception of *Pithecanthropus alalus*, from *Natürliche Schöpfungs-Geschichte* (1898), plate XIX, between 104 and 105. Based on an 1894 painting by Gabriel Max.

Let us look again at the tree diagrams to see if they offer further clarification. In 1868 (Figure 6), the base of the tree is labeled "*Urmensch oder Affenmensch, entstanden aus Menschenaffen*" [Primeval man or ape-man, originating from the anthropoid apes]. Clearly this is a notch above the anthropoid apes, but we are given the choice of whether to emphasize its humanity and call it an *Urmensch* or its intermediacy and call it an *Affenmensch*.

Another diagram from the 1868 edition shows the transition from the apes in a little more detail (Figure 8).[41] Here, as we approach the top of the tree, that advanced, but still a-lingual stage is identified as "*Sprachloser Mensch* Alalus *oder Affenmensch* Pithecanthropus." Again we are given a choice of terms, but the contrast is stronger than in the racial tree of Figure 6, since the first is no longer an *Urmensch*, but a *Mensch*, albeit still qualified as *sprachlos* [speechless]. The addition of zoological Latin names suggests a difference at the genus-level, with *Alalus* apparently higher than *Pithecanthropus*.

In any case, in Haeckel's depiction, the races do not branch out directly at this pre-human level, as Wallace would have had it. Instead, the line continues upward to the stage of the "*Sprechender Mensch* Homo," which is clearly supposed to be human, since it speaks and is placed in the human genus. Only then, after establishing their common humanity and common membership in the genus *Homo*, do the two main racial groups—the wooly-haired and the straight-haired—diverge. This is Haeckel's most egalitarian picture of the human tree.

The diagram by itself would put Haeckel in close agreement with Darwin, but the accompanying text hews a bit more toward Wallace. Following the historical linguist August Schleicher, Haeckel argues there that the main human language groups were ultimately unrelated and did not have a common origin in a single *Ursprache*. Hence, if it could be assumed that racial evolution ran parallel to language evolution, that single "*Sprechender Mensch* Homo" stage at the base of the human part of the tree might not actually have existed. The transition to the speaking stage and to humanity would then have occurred several separate times, giving rise each time to a distinct race and language family.

Haeckel writes:

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41. Nat. Schöpf.-Ges. I, 493.

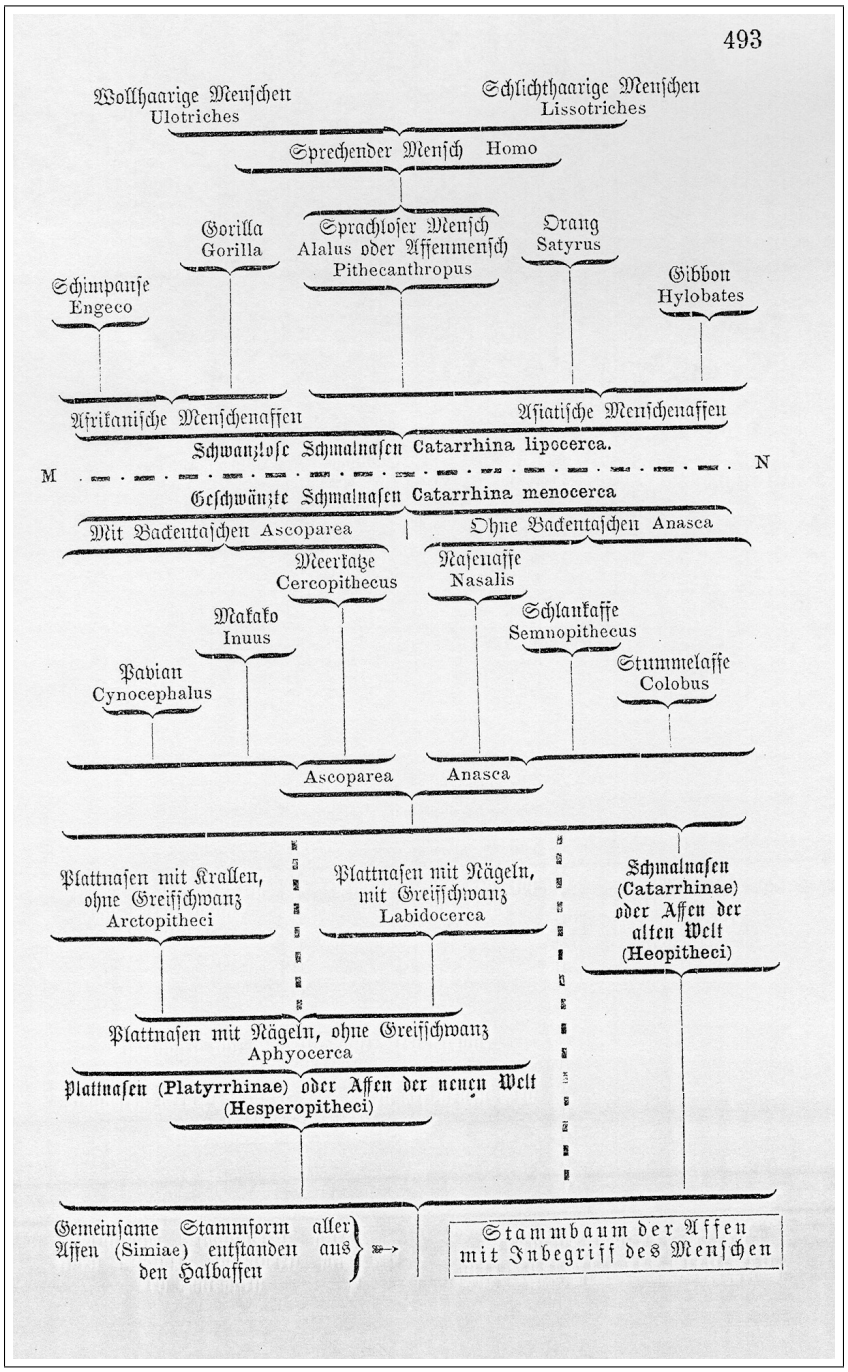

Figure 8: Family tree of apes and men, from Haeckel's *Natürliche Schöpfungs-Geschichte* (1868).

> Human speech as such probably developed only after the genus of speechless primeval men or ape-men split up into several species. In each of these human species, and maybe even in various subspecies and variants of these species, speech developed on its own and independently of the others.[42]

On the other hand, Haeckel knew it was unsafe to rely on the linguistic evidence:

> As is well known, the boundaries of these language families correspond in no way with the boundaries of the various human species or so-called "races." In this lies most eminently the great difficulty presented by the further pursuit of the human family tree into its individual branches, the species, races, variants, etc.[43]

The text leaves us with greater ambiguity than the diagram. It does not refer to any undifferentiated "*Sprechender Mensch* Homo" as the common ancestor of all the races. The races appear instead to have begun diverging at some quasi-human stage, but Haeckel does not specify whether it is already the *Urmensch* or still the *Affenmensch*.

In the 1870 edition (Figure 9),[44] Haeckel deepens the racial differences by deleting the "*sprechender Mensch*" stage from the diagram and having the races branch off directly from the "*Sprachlose Menschen* (Alali) *oder Affenmenschen* (Pithecanthropi)." The revision brings the diagram into bet-

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42. "*Die menschliche Sprache als solche entwickelte sich wahrscheinlich erst, nachdem die Gattung des sprachlosen Urmenschen oder Affenmenschen in mehrere Arten oder Species auseinander gegangen war. Bei jeder von diesen Menschenarten, und vielleicht selbst bei verschiedenen Unterarten und Abarten dieser Species, entwickelte sich die Sprache selbstständig und unabhängig von einander,*" Nat. Schöpf.-Ges. I, 510.

43. "*Bekanntlich entsprechen aber die Grenzen dieser Sprachstämme keineswegs den Grenzen der verschiedenen Menschenarten oder sogenannten 'Rassen,' und hierin vorzüglich liegt die große Schwierigkeit, welche die weitere Verfolgung des menschlichen Stammbaums in seine einzelnen Zweige, die Arten, Rassen, Abarten u.s.w, darbietet,*" Nat. Schöpf.-Ges. I, 510–511.

44. Haeckel 1870, 571.

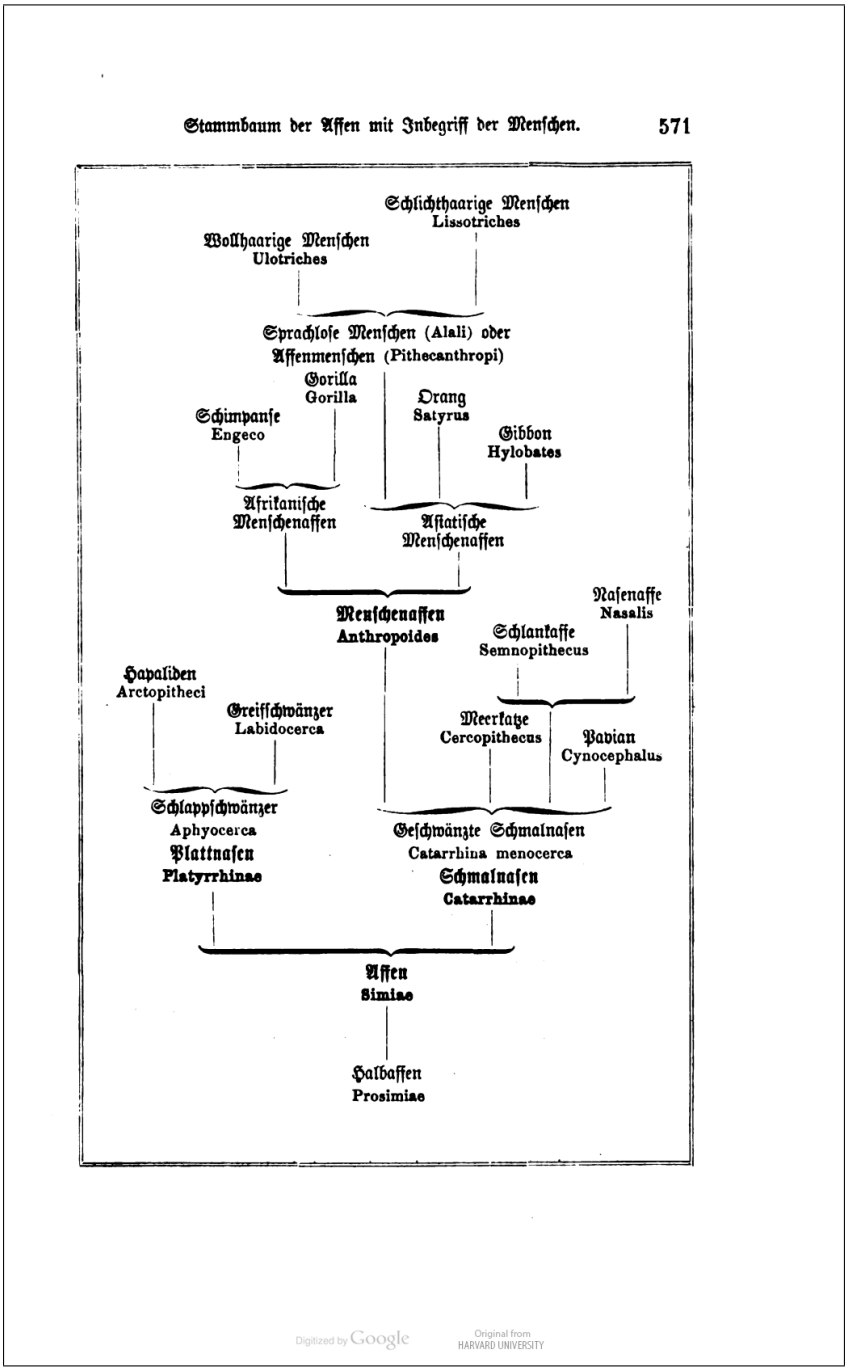

Figure 9: Family tree of apes and men, from Haeckel's *Natürliche Schöpfungs-Geschichte* (1870).

ter alignment with the (still ambiguous) text, where each of the nascent races acquires language on its own. There is no common *Ursprache* and perhaps no human-level common ancestor of the races, depending on how one prefers to classify that last unspeaking stage. Subsequent editions retain the same picture.

Darwin, too, had been intrigued by the analogy between biological and linguistic evolution, but he argued firmly against relying on it as a guide to genealogy and classification, and he refrained more consistently than Haeckel from using it. Just because the linguists could find no trace of a primeval common language, he warned, one should not jump to the conclusion that there really never was one:

> From the fundamental differences between certain languages, some philologists have inferred that when man first became widely diffused he was not a speaking animal; but it may be suspected that languages, far less perfect than any now spoken, aided by gestures, might have been used, and yet have left no traces on subsequent and more highly-developed tongues.[45]

In Darwin's view, those linguists had the sequence of evolutionary events all wrong. No lineage was likely to differentiate into races until it was successful enough to become dominant and "widely diffused" geographically. And in the case of humans, that kind of success could only come *after* the advent of language. This was not only because of the adaptive value of language—its utility for communication and social organization—but also because of the way language would stimulate further mental evolution: "Without the use of some language, however imperfect, it appears doubtful whether man's intellect could have risen to the standard implied by his dominant position at an early period."[46] In short, according to Darwin, language had to come first, before there were races. A unified species acquired speech, attained the human level, succeeded, multiplied, spread, and only then diversified into races.

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45. Descent, 1:235.

46. Descent, 1:235; Alter 2008; for a more thorough comparison of Haeckel's and Darwin's uses of linguistics, see Alter 2007a.

Conclusion

For a Darwinian evolutionist, then, the border region between animals and humans is a wide one, and it is traversed gradually by a family tree that allows for both ascent and divergence. This holds for Haeckel as much as for Darwin himself. Both rejected a linear scale of ascent. Both allowed for tribes, nations, or the smaller "racial" groupings to progress or regress independently and to reach a variety of levels within any major Race.

As proponents of common descent, both had to reject polygenism in favor of monogenism, but they differed in how far back they would place the last common ancestor of all the races and whether they would count it as already human. Haeckel was more willing than Darwin to reach out to the polygenists by making the linguistic and biological differences between the races into longer-standing ones. Still, not even he fully endorsed Wallace's compromise proposal. Especially in his family trees, Haeckel did not have the races diverging from one another until a point very close to (or perhaps even at) the fully human level. Of the three, only Wallace clearly gave the races an earlier pre-human origin and required each to find its own path upward.

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Bibliography

Alter, Stephen G. "Darwin and the Linguists: The Coevolution of Mind and Language, Part 1: Problematic Friends." *Studies in History and Philosophy of Biological and Biomedical Sciences* 38, no. 3 (2007): 573–584.

———. "Darwin and the Linguists: The Coevolution of Mind and Language, Part 2: The Language-Thought Relationship." *Studies in History and Philosophy of Biological and Biomedical Sciences* 39, no. 1 (2008): 38–50.

———. "Race, Language, and Mental Evolution in Darwin's *Descent of Man*." *Journal of the History of the Behavioral Sciences* 43, no. 2 (2007): 239–255.

Baer, Karl Ernst von. *Über Entwickelungsgeschichte der Thiere: Beobachtung und Reflexion*. Vol. 1. Königsberg: Gebrüder Bornträger, 1828.

Beasley, Edward. *The Victorian Reinvention of Race: New Racisms and the Problem of Grouping in the Human Sciences*. New York: Routledge, 2010.

Bowler, Peter J. *The Eclipse of Darwinism: Anti-Darwinian Theories in the Decades around 1900*. Baltimore and London: Johns Hopkins University Press, 1983.

Breidbach, Olaf. "Post-Haeckelian Comparative Biology: Adolf Naef's Idealistic Morphology." *Theory in Biosciences* 122 (2003): 174–193.

Cann, Rebecca L., Mark Stoneking, and Allan C. Wilson. "Mitochondrial DNA and Human Evolution." *Nature* 325 (January 1, 1987): 31–36.

Darwin, Charles. *On the Origin of Species by Means of Natural Selection: Or the Preservation of Favored Races in the Struggle for Life*. London: John Murray, 1859. URL: http://darwin-online.org.uk (visited on March 26, 2013).

———. *The Descent of Man: And Selection in Relation to Sex*. 2 vols. London: John Murray, 1871. URL: http://darwin-online.org.uk/contents.html#books.

Desmond, Adrian and James Moore. *Darwin's Sacred Cause: Race, Slavery, and the Quest for Human Origins*. Chicago: University of Chicago Press, 2011.

Desmond, Adrian and James R. Moore. Introduction to *The Descent of Man*, by Charles Darwin. London: Penguin Classics, 2004.

Gasman, Daniel. *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the Monist League*. New York: American Elsevier, 1971.

Gliboff, Sander. *H. G. Bronn, Ernst Haeckel, and the Origins of German Darwinism: A Study in Translation and Transformation*. Cambridge, MA: MIT Press, 2008.

Gould, Stephen J. *Ontogeny and Phylogeny*. Cambridge, MA: Belknap Press of Harvard University Press, 1977.

———. *The Structure of Evolutionary Theory*. Cambridge, MA: Belknap Press of Harvard University Press, 2002.

Haeckel, Ernst. *Anthropogenie: Oder, Entwickelungsgeschichte der Menschen: Gemeinverständliche wissenschaftliche Vorträge über die Grundzüge der menschlichen Keimes- und Stammes-Geschichte*. Leipzig: W. Engelmann, 1874.

———. *Natürliche Schöpfungs-Geschichte: Gemeinverständliche wissenschaftliche Vorträge über die Entwicklungslehre im allgemeinen und diejenige von Darwin, Goethe und Lamarck im besonderen*. Berlin: Georg Reimer, 1868.

———. *Natürliche Schöpfungs-Geschichte: Gemeinverständliche wissenschaftliche Vorträge über die Entwicklungslehre im allgemeinen und diejenige von Darwin, Goethe und Lamarck im besonderen*. 2nd ed. Berlin: Georg Reimer, 1870.

———. *Natürliche Schöpfungs-Geschichte: Gemeinverständliche wissenschaftliche Vorträge über die Entwicklungslehre im allgemeinen und diejenige von Darwin, Goethe und Lamarck im besonderen*. 9th ed. Berlin: Georg Reimer, 1898.

Jenner, Ronald. *Imagining Ancestors*. In prep.

Keel, Terence D. "Religion, Polygenism and the Early Science of Human Origins." *History of the Human Sciences* 26, no. 2 (2013): 3–32.

Lamarck, Jean-Baptiste de. *Philosophie Zoologique: Ou Exposition Des Considérations Relatives à L'histoire Naturelle Des Animaux*. 2 vols. Paris: Dentu, 1809.

———. *Philosophie Zoologique: Ou Exposition Des Considérations Relatives à L'histoire Naturelle Des Animaux*. 2 vols. 2nd ed. Paris: Germer Baillère, 1830.

Lovejoy, Arthur O. *The Great Chain of Being: A Study in the History of an Idea*. The William James Lectures, delivered at Harvard University, 1933. Cambridge: Harvard University Press, 1936.

Richards, Robert J. *The Tragic Sense of Life: Ernst Haeckel and the Struggle Over Evolutionary Thought*. Chicago and London: University of Chicago Press, 2008.

Rupke, Nicolaas A. "Neither Creation nor Evolution: The Third Way in Mid-Nineteenth Century Thinking about the Origin of Species." *Annals of the History and Philosophy of Biology* 10 (2005): 143–172.

Russell, E. S. *Form and Function: A Contribution to the History of Animal Morphology*. London: John Murray, 1916.

Stepan, Nancy. *The Idea of Race in Science: Great Britain, 1800–1960*. Hamden: Archon Books, 1982.

Stocking, George W. "The Persistence of Polygenist Thought in Post-Darwinian Anthropology." In *Race, Culture, and Evolution: Essays in the History of Anthropology*, 42–68. Chicago: University of Chicago Press, 1968.

Uschmann, Georg. *Der morphologische Vervollkommnungsbegriff bei Goethe und seine problemgeschichtlichen Zusammenhänge*. Jena: Gustav Fischer, 1939.

Wallace, Alfred R. "The Origin of Human Races and the Antiquity of Man Deduced from the Theory of 'Natural Selection.'" *Journal of the Anthropological Society of London* 2 (1864): 158–187.

Wolpoff, Milford H. and Rachel Caspari. *Race and Human Evolution: A Fatal Attraction*. New York: Simon & Schuster, 1997.

———. "Response to 'Grappling with the Ghost of Gould' by David P. Barash." Letter to the editor. *Human Nature Review* 2 (2002): 297.

Wolpoff, Milford H., John Hawks, and Rachel Caspari. "Multiregional, Not Multiple Origins." *American Journal of Physical Anthropology* 112 (2000): 129–136.

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